

# Health Manpower

## Family Physicians for Underserved Areas The Role of Residency Training

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*Graduates of four rural and four urban family practice programs were interviewed to determine the nature of their practices and the factors that had influenced their practice location decisions. All programs gave residents substantial experience providing continuity of care for underserved populations. Of the 158 physicians surveyed, 58 (46%) were working in areas designated as underserved. The percentage of physicians in underserved areas was higher than that reported in other studies and was much higher than would be expected if practice sites were selected on the basis of population distribution alone. Notable differences in personal and practice characteristics were found between the physicians who chose to work in underserved areas and those who did not and between those who established practices in rural and in urban underserved areas.*

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Since the mid 1960s, the number of physicians graduating from American medical schools has doubled and from 1970 to 1986 the number of physicians in practice increased from 326,000 to 525,000.<sup>1</sup> The physician-to-population ratio will increase from 152 per 100,000 in 1970 to 215 in 1990 and 240 by the year 2000.<sup>2</sup> Although many communities have an abundance of physicians, numerous remote rural and inner-city communities continue to be underserved.<sup>3-7</sup>

An important strategy for improving physician distribution has been to increase the number of physicians entering primary care specialties. This has been accomplished principally by providing support for primary care residency programs, by promoting primary care faculty development, and by supporting the development of family practice departments.<sup>8</sup>

Area health education centers (AHECs) operate with the goal of improving access to health care in underserved areas, using educational programs that are developed jointly by health professions training programs and representatives of underserved communities.<sup>9</sup> As part of their strategy for improving access to health care, the California AHECs have entered into partnerships with primary care residency programs. In many communities, the AHECs have selected family practice programs as partners because of their established commitment to care for underserved populations and their interest in developing clinical training experiences in underserved communities—with AHEC support.

The hypothesis underlying the California AHEC system's commitment to work with primary care residency programs was that many of the graduates of these programs would establish practices in underserved communities. We report

on a study of the graduates of eight such family practice programs, with a focus on their work in underserved communities.

### Subjects and Methods

Four urban and four rural family practice programs were selected for study. All met the following criteria:

- The goals of the program included preparing physicians for clinical practice in underserved areas.
- A major part of the residents' continuity of care training was in an underserved area, working with an underserved population, or both.
- At least 12 physicians graduated from the program between 1978 and 1981.

The four rural family practice programs were based at hospitals that averaged 250 beds (range, 176 to 417); the four urban programs were at hospitals that averaged 509 beds (range, 437 to 582) (Table 1).

The study subjects were those physicians who had completed their training from 1978 to 1981. As a result, the physicians generally had two to five years of practice experience by the spring of 1983 when the data were collected. A questionnaire was developed that included demographic and practice location decision questions that had been used in other studies.<sup>10-12</sup> Four interviewers were trained by one of the authors (M.D.C.). About two thirds of the interviews were done in person, the rest by telephone.

The census tract numbers for the physicians' practice locations were identified by using zip code maps and 1980 census map overlays. Census data were recorded on the eth-

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**ABBREVIATIONS USED IN TEXT**

AHEC = area health education centers  
 CHMPC = California Health Manpower Policy Commission

nicity, poverty level, population, and population density of each physician's practice community.

The medical service study area, as defined by the California Office of Statewide Health Planning and Development, was used as the geographic unit of analysis. Medical service study areas are aggregations of census tracts and may represent an entire rural county or a small portion of a densely populated urban area. The Office of Statewide Planning and Development and the California Health Manpower Policy Commission (CHMPC) define a medical service study area as rural if it "has a population of fewer than 250 persons per square mile and . . . no town . . . with a population in excess of 20,000." The CHMPC criteria for designating an area as medically underserved is "a medical service study area with a ratio of population to each primary care physician equal to or greater than 1,967 to 1 primary care physician."<sup>13</sup> This commission also recognizes ratios of 1,855 persons to 1 primary care physician for designating some medical service study areas that meet additional special criteria.

The CHMPC population and population density criteria were also applied to the practice locations of physicians not in California, and information from the appropriate state health department was used to determine whether practice locations met the same criteria.

**Results**

All 173 of the 1978 to 1981 graduates were located, and 158 (91%) were interviewed during the three-month study period (Table 2). Of these, 126 were clinically active family practitioners in California.

Almost half (46%) of the California physicians were practicing in underserved areas, as defined by the CHMPC (Table 3). Of the California physicians, 81% were in urban areas and 19% were in rural communities. Of the graduates who had remained in California, 64% (80 of 126) were practicing in the same county in which they had completed their training.

*Physicians' Backgrounds*

The California physicians (n = 126) included a large number of nonwhite minorities (n = 32, 25%) and women (n = 31, 25%). In comparing the physicians practicing in underserved areas (n = 58) with those in better-served communities (n = 68), no significant differences in ethnicity were found, nor were any significant differences noted in age, sex,

marital status, or number of children. In fact, the only demographic difference between the physicians working in underserved areas and those in better-served areas was that more physicians in underserved areas had spouses who attended rural high schools (38% versus 18%).

Comparing physicians in urban underserved areas with those in rural underserved areas revealed several significant differences. More minority physicians had developed practices in urban areas; in fact, half (16 of 32) of all of the minority physicians in the study had established practices in urban underserved areas. When compared with those in urban underserved areas, the physicians in rural underserved areas had larger families (1.6 versus 0.9 children) and more frequently had spouses with a rural background (89% versus 16%).

*Social, Community, and Professional Factors*

The physicians were asked which various factors had influenced their selection of practice locations (Table 4). "Opportunity to practice in a salaried position" and "ability to practice with a nurse practitioner or physician assistant" were valued more highly by physicians in the underserved areas than by those in better-served areas. Also, physicians in underserved areas placed relatively less importance on "access to medical consultation," "proximity of extended family and friends," and "quality of community services (police, fire, schools)."

The physicians in rural underserved areas were more likely to consider "size of community" and "amount of crime" in making their practice location decisions, while urban physicians placed more importance on "availability of high quality continuing medical education," "economic condition of the community," "nearness of academic medical center," and "proximity of extended family and friends."

*Practice Characteristics*

Practice characteristics of physicians in underserved areas (n = 58) were compared with those of physicians in better-served areas (n = 68), and comparisons were made between the practices in urban (n = 42) and rural (n = 16) underserved areas. Physicians in underserved areas more frequently identified publicly funded clinics and emergency departments as their primary practice locations (Table 5); private practice and prepaid group settings were more frequently cited by physicians in better-served areas. There was greater use of Medicaid (Medi-Cal) by patients in under-

**TABLE 1.—Participating Hospitals**

Hospital Program	Rural Hospitals (n=4)	Urban Hospitals (n=4)
<b>Bed Size</b>		
Average . . . . .	250	509
Range . . . . .	176 to 417	437 to 582
<b>Residency graduates</b>		
Total (1978 to 1981) . . . . .	101	72
Average per program . . . . .	25	18
Range per program . . . . .	17 to 37	12 to 24
Number interviewed . . . . .	95	63

**TABLE 2.—Practice Locations**

Demographics of Graduates	Total Eight Programs	
	No.	%*
Number Interviewed . . . . .	158	100
<b>Practice Locations</b>		
Rural . . . . .	41	26
Urban . . . . .	112	71
No practice location† . . . . .	5	3
<b>State of Residence</b>		
California . . . . .	126	80
Other state . . . . .	28	18
Out of USA . . . . .	2	1
No permanent residence . . . . .	2	1

\*All percentages have been rounded to equal 100%.  
 †Two physicians were practicing out of the United States, one physician was in postgraduate training, one physician was working as a nonclinical consultant, and one physician was not in medical practice.

TABLE 3.—Practice Locations of 126 Family Physicians in California

Practice Location	Urban		Rural		Total	
	No.	%*	No.	%*	No.	%*
In state-designated underserved area†	42	33	16	13	58	46
Not in designated area	60	48	8	6	68	54
Total	102	81	24	19	126	100

\*All percentages have been rounded to total 100%.  
†As defined by the California Health Manpower Policy Commission.

TABLE 4.—Social, Community, and Professional Factors Influencing Practice Location Selection\*†

Influential Factor	Total, n=126	Not in Underserved Areas, n=68	In Underserved Areas, n=58	In Urban Underserved Areas, n=42	In Rural Underserved Areas, n=16
A feeling of being needed	66	57	75	73	81
Acceptance of family practice by community	71	74	68	61	88
Size of community	66	71	61	54‡	81‡
Opportunity to practice in a salaried position	48	38‡	60‡	61	56
Access to medical consultation	63	73‡	51‡	54	44
Availability of high quality continuing medical education	50	50	51	58‡	31‡
Economic condition of community	53	54	51	58‡	31‡
Part-time teaching opportunity	39	34	46	51	31
Ability to practice with nurse practitioner or physicians' assistants	29	18‡	42‡	37	56
Children's educational needs or opportunities	42	47	37	29	56
Nearness of academic medical center	40	43	37	42‡	25‡
Proximity of extended family and friends	48	57‡	37‡	39	31
Employment or educational opportunities for spouse	45	53	35	37	31
Amount of crime	41	48	32	22‡	56‡
Quality of community services (police, fire, schools)	33	47‡	16‡	12	25
Previous commitment to serve a medically underserved population: NHSC, military, or other obligation	4	0‡	9‡	12	0

NHSC=National Health Resources Corps

\*The numbers represent percentage of respondents indicating that factor was positive.  
†Original 5-point rating scale (1=strongly negative to 5=strongly positive) was condensed to three responses—negative, neutral, and positive;  $\chi^2$  statistical tests were done, and the significance level was set at  $P \leq .05$ .  
‡Significant at  $P \leq .05$ .

served areas, but no significant differences between the urban and rural subsamples were noted. In fact, no significant differences in practice arrangements or payment methods were identified between the physicians in the urban and rural underserved areas. Overall, the work weeks of physicians in underserved areas were similar to those in better-served communities, but the physicians in rural underserved areas worked more hours (60.8 versus 49.5) and had almost twice as many inpatient or emergency department contacts as did physicians in urban underserved areas. Physicians in underserved areas also spent more time each week teaching (5.3 versus 2.2 hours).

## Discussion

The factors that influence the geographic distribution of physicians have been studied extensively in the past 20 years.<sup>7,14-16</sup> The location of medical education—both undergraduate and graduate—is clearly the most important determinant of eventual practice site selection.<sup>17,18</sup> This is confirmed by our finding that 64% of the study physicians were practicing in the same county where they had completed their training.

Although the demonstrated relationship between site of residency training and eventual practice location provides health planners and policymakers with a powerful tool, getting residents to stay near where they are trained provides only a partial response to the problem of physician maldistribution.

It is even more important to develop programs that encourage physicians to work in underserved communities after completing training. The finding that 46% of physicians in California had established practices in state-designated underserved areas is remarkable in light of the social forces contributing to physician maldistribution and evidence that most physicians continue to locate in high physician density areas.<sup>3,5,6</sup> By comparison, in the only other published study using the same criteria of the California Office of Statewide Health Planning and Development for designating underserved areas, 31% of the graduates of six California family practice programs had entered practice in underserved areas.<sup>19</sup> Moreover, these data show that only 25% of California's population live in state-designated underserved areas. Therefore, the finding that 46% of the study physicians were practicing in underserved areas is much higher than would be expected if these physicians were distributed according to population alone.

We think that the practice location decisions of the physicians in this study were strongly influenced by the nature of their residency programs. The goals included a commitment to improving the distribution of physicians, and each program provided residents with substantial continuity of care experiences with underserved populations. The content—as well as the location—of these programs increased the willingness of these young physicians to locate in underserved areas. If primary care physicians are to gain the skills and

TABLE 5.—Practice Characteristics of Family Physicians in California\*†

Primary Practice Setting	Total, n=126		Not in Underserved Areas, n=68		In Underserved Areas, n=58		In Urban Underserved Areas, n=42		In Rural Underserved Areas, n=16	
	No.	%	No.	%	No.	%	No.	%	No.	%
Private practice, solo	32	25	19‡	28	13‡	22	9	21	4	25
Private practice, group	37	29	26‡	38	11‡	19	7	17	4	25
Prepaid group	12	10	9‡	13	3‡	5	2	5	1	6
Emergency department (noncontinuity-of-care facility)	12	10	5‡	7	7‡	12	4	10	3	19
Publicly funded clinic	32	25	8‡	12	24‡	41	20	48	4	25
Unknown	1	1	1‡	2	0‡	0	0	0	0	0

\*The numbers represent percentages and may total more or less than 100% due to rounding.  
 †Statistical significance tested by using  $\chi^2$ ;  $P \leq .05$ .  
 ‡ $P \leq .05$ .

confidence necessary to establish their practices in underserved areas, they must be given extensive experience providing high-quality continuity of care to underserved populations.

Other studies of physician distribution, and particularly family practice follow-up studies, have not distinguished between urban and rural underserved areas; in many cases they have not addressed inner-city areas at all. In part, this is because of the absence of an appropriate unit of analysis, in that the standard metropolitan statistical area—the most widely cited geographic unit—does not distinguish between urban subareas that are in need of services and those that are not.

The use of “rural” as a proxy for “underserved” in physician distribution studies has assured that the only socially desirable benefit of physician redistribution that has been measured has been the increase in the number of physicians working in small or remote rural areas. This approach has tended to ignore the fact that while both remote rural communities and inner-city communities have been unattractive to physicians, this has been for different reasons.

Previously published studies on practice location have shown that physicians who choose urban areas tend to value professional factors, while rural physicians place more importance on personal and family aspects of their communities.<sup>14,20</sup> Our findings suggest that the decision to locate in an urban or rural community is largely independent of the decision of whether to work in an underserved area. Physicians who choose urban areas share a common set of values, regardless of whether they are choosing to work in an underserved area or not; the same is true of physicians who choose rural areas. For example, we found that physicians in rural underserved areas have more rural family ties and larger families; this is consistent with other studies of how all rural physicians select their practice locations.<sup>15</sup>

On the other hand, we found that physicians in underserved areas—urban or rural—tended to share several characteristics. Such physicians more frequently chose salaried positions and opportunities to work with mid-level practitioners than physicians in better-served areas. Physicians in underserved areas placed less importance on “access to medical consultation,” “proximity to extended family and friends,” and “quality of community services.” These findings are consistent with those of the few published studies of physicians who choose to work with underserved populations.<sup>21</sup>

It is well established that minority physicians tend to serve minority communities.<sup>22</sup> We found that half (16 of 32) of the

minority physicians in our study had established practices in urban underserved areas. Our study included a higher percentage of minorities (25%) than had been reported in two previous surveys,<sup>10</sup> and minorities were slightly overrepresented among the physicians in underserved areas. The high percentage of women (25%) did not appear to contribute to the results, in that the women were distributed no differently than their male colleagues.

This study did not provide data on the role of indebtedness in the distribution of physicians. The limits of supply-and-demand forces in meeting the needs of underserved communities are well documented.<sup>3,6,7</sup> On balance, economic forces may actually have a negative effect on specialty and geographic distribution in this era of increasing student indebtedness and narrowing marketplace opportunities.<sup>2</sup> Clearly, financial considerations prevent some people from going to medical school at all and discourage many physicians from entering practice in underserved areas. These forces operate apart from physicians’ personal or social goals and their training.<sup>1</sup>

The practices of physicians in underserved areas differed from those of physicians in better-served communities in several respects. For example, only 41% of physicians in underserved areas were in solo or group private practice, compared with 66% of the physicians in the better-served areas and 74% to 87% in published studies.<sup>11,16,23</sup> Of physicians in underserved areas, 41% reported “a publicly funded clinic” as their primary practice site, compared with 12% of physicians in better-served areas.

The physicians in rural underserved areas worked approximately ten hours a week more than physicians in urban underserved or better-served communities. Most of this incremental time difference was spent doing inpatient and emergency department care. Whether this influenced the choice of practice location could not be determined from our data. In a comparable study of graduates of New York state family practice programs,<sup>12</sup> more hours of work a week were recorded (72.1 versus 52.4), but the New York group reported a lower percentage of time in clinical activity (64.6% versus 81.7%). In the aggregate, while physicians in underserved areas did not work more hours than physicians in better-served areas, physicians in rural areas (regardless of whether or not the areas were underserved) did work longer hours than their urban counterparts. This information should be of substantial interest to physicians in their career planning.

Our findings and the published differences in factors used by physicians to select urban and rural practice locations<sup>14,20</sup>

should help directors of urban and rural programs to recruit, select, and train physicians to meet the specific needs of their respective communities.

### Summary

All 1978 to 1981 graduates (173) of eight California family practice programs were located, and 91% (158) were interviewed. A total of 126 had remained in California, and 46% of these had established practices in areas designated by the state as underserved. This high percentage of graduates in underserved areas related in large part to the fact that the programs selected for study had a strong commitment to placing graduates in underserved areas. This commitment was expressed in their providing continuity of care training experiences with underserved populations.

Our findings suggest a successful formula for placing physicians in underserved areas:

- Primary care residency training programs should be developed and supported in areas that are within or adjacent to underserved areas.
- Residents should be selected on the basis of those aspects of their backgrounds and expressed values that tend to be predictive of their likely preference for an urban or rural practice setting, depending on the location and goals of the residency program.
- Most importantly, residency programs should assure that each trainee is provided with substantial continuity of care experience working with underserved populations.

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